

perceived problem, that in reality contributes to a series of other, secondary and tertiary problems, the sum total of which could exceed the magnitude of the problem which the initial solution had attempted to correct! This was a point that was stressed by the late Indian Prime Minister, Mrs Indira Gandhi, but now appears to have been widely forgotten.

Dr R.K. Pachauri, in his keynote address, emphasized the need for dynamic modelling rather than such static modelling as is generally used by the Government. By the time static models have been developed, often national and international conditions will have changed significantly—which makes solutions that are analysed through such static models mostly obsolete for planning and decision-making purposes. He said that, in an Indian context, more emphasis than hitherto needs to be placed on water-resources modelling and modelling of demographics, as both issues are of paramount importance for the future of the country.

Many papers were presented on ecosystems modelling at the Seminar, the primary focus of all of them being on their potential application in planning, decision-making, and management processes in developing countries. Among the Authors who presented major papers were Professor S.P. Mahajan (Head of the newly-established UNIDO-sponsored Pollution Control Research Institute, Hardwar, India) on modelling of anaerobic digestion of distillery spent-wash in a biological bed, Dr D. Mukherjee (from the United States) on habitat monitoring of living resources, R. Vidyasagar Rao (of the Central Water Commission, India) on modelling of environmental costs for water development projects, Professor A. Das Gupta (of the Asian Institute of Technology, Bangkok) on a modelling case-study of ground-water withdrawal for Bangkok and its environmental consequences, Dr A. Ghosal (of the Indian Council for Scientific and Industrial Research) on the role of cybernetics in ecosystems modelling, and Dr Ashok Khosla (see above) on modelling of sustainable development systems.

The Seminar was well-organized and the organizers, quite correctly, provided adequate time for discussions. The papers prepared for the Seminar will shortly be available as a book.

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SEVENTEENTH TRIENNIAL GENERAL ASSEMBLY OF
IUCN, HELD IN SAN JOSÉ, COSTA RICA, FROM 1–10
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More than one thousand environmental scientists, administrators, and activists, from 93 countries, concluded a world conference in San José, Costa Rica, on 10 February 1988, after 10 days of debate on the state of the planet from Antarctica to the Tropics, and on biota from various plants to Zebras. The economics of conserving natural resources dominated the discussions. This 17th Triennial General Assembly of the International Union for Conservation of Nature and Natural Resources (IUCN) was the biggest and most productive in the Swiss-based Union's 40-years' history. Delegates from IUCN's unique and sometimes contentious membership of states, government agencies, and private organizations, *plus* experts from the network of IUCN's specialized Commissions, approved a programme

setting priorities in conservation and sustainable use of natural resources for development for the next three years.

Costa Rica's Nobel Peace Prize laureate and President, Oscar Arias, spoke at the General Assembly opening ceremonies on 1 February and called for 'development compatible with the conservation of life in all its forms in a true peace with Nature.' The World Bank, the Inter-American, African, and Asian, Development Banks, development aid agencies, and a number of major US philanthropic foundations, participated in the Assembly for the first time. IUCN President Dr M.S. Swaminathan, of India, welcomed this as recognition that 'the urgent need to promote development in the Third World is inseparable from the conservation of the biogenetic and natural-resource base on which development depends.' There was evidence that both the intergovernmental and private financial communities are looking for new ways, such as the 'debt-swaps for Nature' (see below), to invest in conservation.

For the first time, too, the issue of rapid population growth was high on the agenda. Dr Nafis Sadik, Executive Director of the UN Fund for Population Activities, and Bradman Weerakoon, Secretary-General of the International Planned Parenthood Federation, spoke to the delegates, and the way was cleared for improved cooperation between the population and conservation movements through IUCN.

The Assembly reviewed a draft World Conservation Strategy for the 1990s that will feature the interaction of population and conservation tactics. IUCN is also strengthening its activities in the field of population and, by giving the knowledge and skills of women a greater role than hitherto, in promoting sustainable development. The increased prominence of these elements and several others in IUCN's 1988–90 Programme reflects the Union's commitment to implementing recommendations of the World Commission on Environment and Development Report to the United Nations—the 'Brundtland Report' of 1987.* The theme of the 17th General Assembly, 'Conservation: A Shared Responsibility', focussed on this objective.

IUCN Involvement in Marine & Coastal Conservation

The Union's involvement in marine and coastal conservation will be significantly enlarged. With initial funding from the UN Environment Programme (UNEP), UNESCO, and some IUCN members, 14 regionally-based Task Forces on Marine Conservation will be created as a watchdog network on the status of the seas. They will report to a new IUCN Advisory Group that will make the information available to collaborating governments and institutions. IUCN is planning a large global conference on marine conservation for 1990.

During this General Assembly, the Natural Resources Ministers of Costa Rica and Nicaragua signed a letter of intent to begin the creation of a joint 'international peace park' along the watershed of the San Juan River that divides those countries, from Lake Nicaragua to the Caribbean. It will include diverse ecobioomes, ranging from forests to estuaries, and will combine fully-protected areas with zones for sustainable use of resources. Costa Rica also announced abandonment of a project to build an oil pipeline through its side of another 'peace park' project, 'La Amistad', to be shared with Panama. The action enabled IUCN to declassify 'La Amistad' as one of the world's most

* See the review by IUCN's Director-General, Dr Martin W. Holdgate, published in our Autumn issue of last year (*Environmental Conservation*, 14(3), p. 282, 1987).—Ed.

threatened national parks. The IUCN Commission on National Parks and Protected Areas released its new list of the most threatened protected areas. There are 85 designated—up from 58 when the last General Assembly was held in Madrid in 1985. The Species Survival Commission also issued its list of most endangered species of plants and animals. Twelve were selected to represent some 4,500 species that are endangered world-wide.

Proposed International Convention on Biological Diversity

An important issue emerging from the meeting is the proposed International Convention on Biological Diversity. A first draft, prepared by IUCN's Commission on Environmental Policy, Law, and Administration, aroused lively debate. Controversy centred on the financing and distribution of a fund to assist countries undertaking to protect areas that are rich in wild genetic resources of plants and animals, or to compensate them from a proposed levy on commercial exploitation of these genetic stocks, which are considered an international patrimony. The draft will undergo review by scientists and governments in the coming months.

Economics was a thread that weaved its way through all the official hearings and the busy market-place of contacts, lobbying, and fund-raising, 'in the corridors'. Costa Rica provided one of the first examples of a new mechanism for financing conservation, called 'debt-swap for Nature'. This involves a donor purchasing government dollar debt from private banks at a discount—currently around 75%—and turning it back to the Government through a foundation in exchange for bonds paying interest and principal in national currency at full value. This money must be used for national conservation, such as purchase and protection of threatened forests.

Further Economic Considerations

The Costa Rican Minister of Natural Resources, Energy, and Mines, Dr Alvaro Umaña, lobbied at the meeting for direct donations of debt-for-conservation by creditor banks. In the US, such donations are partially tax-deductible. He announced a US \$254,000 donation from the Fleet-Norstar National Bank of Rhode Island, and said that another, for more than a million dollars, was being negotiated in the US. He also announced new debt-swap agreements for \$5.4 millions (non-discounted value) with the World Wildlife Fund-US, the US Nature Conservancy, and other conservation groups and foundations.

The debt-swap innovation was praised by H.R.H. Prince Philip, Duke of Edinburgh, who addressed the delegates as Vice-president of IUCN and President of the World Wide Fund for Nature (WWF) International, and by Dr Mostafa K. Tolba, Executive Director of UNEP. Environmental ministers from 13 countries were among participants who followed new financing ideas closely. Economic incentives to show how conservation can bring benefits to people who are now causing environmental destruction, were also discussed. Promotion of buffer-zones around forests and parks are being encouraged, within which buffer-zones local people will be helped to use forest products for profit in a sustainable way.

Pan-American Participation

During a full day devoted to conservation in Central America, Guillermo Archibald, a Kuna Indian leader from Panama, described how the 30,000 Kuna are managing an entire district. 'The forest provides us with housing, food,

medicines, and boats', he said. 'We patrol it to keep out squatters and loggers. We have built tourist lodges and helped scientists survey the area to see what other benefits it can provide.'

Indigenous peoples from North and South America also took part in the General Assembly, often defending their right to harvest wildlife, while another example was given by private environmental groups in Honduras engaged in protecting the watershed for the capital Tegucigalpa, in La Tigre National Park. They were able to block logging in the Park by showing that the forest supports a water-supply that is now reliable and very much cheaper than water taken from a polluted river serving the city.

Some Financial Aspects and Necessary Rehabilitation

These matters were examined on a more theoretical level by economists and bankers in a workshop seeking systems for putting a value on the benefits of leaving a natural area alone, instead of the current practice of fixing value by the profits to be made by commercial exploitation. IUCN believes that statistics revealing the full value of conservation could have a major impact on government policies.

Economic disincentives for destroying the natural environment were exemplified by the results of the 'Hamburger Connection' campaign by US environmentalists opposed to the clearing of Costa Rican forests for rangelands to raise beef for export to the fast-food industry. Minister Umaña reported that the withdrawal of Burger King's contracts for beef in response to the protests had cut the country's beef exports by 40%. The Costa Rican answer, he said, is to replant the forests and concentrate cattle-raising on appropriate land with modern intensive methods: 'You can have your hamburger and plant forests too', he forecast. Rehabilitation of degraded lands is becoming an environmental 'growth industry', according to IUCN Deputy Director-General Jeffrey McNeely (Conservation). 'The amount of virgin areas left to save is fast dwindling', he said: 'The challenge now is to restore to productive use the vast areas that have been overexploited'.

There was much internal business conducted as well as elections for IUCN Council through 1990. Details of Regional Councillors, awards, etc., can be obtained from Mr Delmar Blasco, IUCN Headquarters, Avenue du Mont-Blanc, CH-1196 Gland, Switzerland: telephone 022-64 71 81, telex 419 605, telefax 022-64 46 15.

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INTERNATIONAL WORKSHOP ON CLEAN TECHNOLOGIES AND PRODUCT DESIGN, HELD AT THE VIENNA INTERNATIONAL CENTER, VIENNA, AUSTRIA, DURING 24-26 FEBRUARY 1988

This three-days' Workshop on Clean Technology was held in Vienna during 24-26 February 1988. Sponsored by the International Association for Clean Technologies and the Austrian Chamber of Commerce, with administrative support from UNIDO, the meeting brought together 50 academics and government officials interested in Clean Technology from European countries and the US.

Although there is still no generally-accepted definition of the term, clean technology is any production system which has been effectively designed to use resources efficiently and to minimize or preferably eliminate waste. Unlike conventional 'end-of-pipe' pollution systems, these clean